We claim:

1. An electrostatic stepping comb drive actuator, comprising:

a first member comprising:

a first tooth and a second tooth each comprising:

a first surface, the first surface of the first tooth opposite the first surface of the second tooth;

first conductors, and

a first electrode array located on the first surfaces and comprising first electrodes in first electrode groups, the first electrodes in each of the first electrode groups electrically connected to a same one of the first conductors; and

a second member comprising:

a third tooth interdigitated with the first tooth and the second tooth and movable in a direction of travel relative thereto, the third tooth comprising:

a second surface disposed opposite each of the first surfaces,

second conductors, and

a second electrode array located on the second surfaces, the second electrode array comprising second electrodes in second electrode groups, the second electrodes in each second electrode group electrically connected to the same one of the second conductors.

2. The actuator of claim 1, further comprising voltage sources that impose voltage patterns on the first and the second electrodes.

3. The actuator of claim 2, wherein the voltage pattern imposed on the first electrodes is a spatially alternating voltage pattern, wherein the voltage pattern imposed on the second electrodes is a spatially substantially alternating voltage pattern.

4. The actuator of claim 2, wherein the voltage pattern imposed on the second electrodes is a spatially alternating voltage pattern, wherein the voltage pattern imposed on the first electrodes is a spatially substantially alternating voltage pattern.

5. The actuator of claim 2, wherein the voltage pattern comprises a high voltage and a low voltage.

6. The actuator of claim 5, wherein the voltage pattern comprises a third voltage intermediate between the high voltage and the low voltage.

7. The actuator of claim 1, wherein each first conductor is electrically connected to every third first electrode.

8. The actuator of claim 7, wherein each second conductor is electrically connected to every other of the second electrodes.

9. The actuator of claim 1, wherein each second conductor is electrically connected to every third second electrode.

10. The actuator of claim 9, wherein each first conductor is electrically connected to every other of the first electrodes.

11. The actuator of claim 1, wherein the first electrodes have a first pitch and the second electrodes have a second pitch different from the first pitch.

12. The actuator of claim 1, wherein the first electrode array comprises N first electrodes per unit distance and the second electrode arrays each comprise M second electrodes per unit distance, and wherein M is different from N.

13. The actuator of claim 1, further comprising a suspension that supports the first member and the second member relative to one another, and wherein the suspension is compliant in the direction of travel and is stiff in directions orthogonal to the direction of travel.

14. An electrostatic stepping comb drive actuator, comprising:

a stationary member having a tooth, the tooth comprising:

opposed surfaces, and

a first electrode array disposed on the first surfaces;

a first conductor coupled to the first electrode array;

a moveable member comprising second electrode arrays disposed on surfaces opposite the first surfaces; and

second conductors electrically connected to the second electrode arrays.

15. The actuator of claim 14, wherein the first conductor comprises N individual conductors, wherein the first electrode array comprises first electrodes, and wherein each

of the N individual conductors is electrically connected to selected ones of the first electrodes.

16. The actuator of claim 15, wherein N equals three, wherein each of the N individual conductors is electrically connected to every third one of the first electrodes, and wherein the first conductor imposes a spatially substantially alternating voltage pattern on the first electrode array.

17. The actuator of claim 16, wherein the spatially substantially alternating voltage pattern comprises at least one high voltage and at least one low voltage.

18. The actuator of claim 17, wherein each of the first electrodes is set at the high voltage or the low voltage, and wherein a voltage at selected ones of the first electrodes changes from the high voltage to the low voltage and a voltage at other selected ones of the first electrodes changes from the low voltage to the high voltage.

19. The actuator of claim 15, wherein each of the second conductors comprises M individual conductors, wherein each of the second electrode arrays comprises second electrodes, and wherein each of the M individual conductors is electrically connected to selected ones of the second electrodes.

20. The actuator of claim 19, wherein each of the M individual conductors is electrically connected to every second one of the second electrodes.

21. The actuator of claim 19, wherein the first electrodes have a first pitch and the second electrodes have a second pitch different from the first pitch.

22. An electrostatic comb drive actuator, comprising:

a tooth, comprising:

opposed first surfaces, and

a first electrode array located on the first surfaces, the first electrode array comprising first electrodes;

an interconnected pair of coupled teeth, comprising:

second surfaces opposite the first surfaces, and

second electrode arrays located on the second surfaces, the second electrode arrays comprising second electrodes.

23. The electrostatic stepping comb drive actuator of claim 22, further comprising means for imparting discrete movement steps to the second member.

24. The actuator of claim 22, further comprising a suspension, wherein the tooth and the second interconnected pair of coupled teeth are supported relative to one another and wherein the suspension is compliant in a first direction and is stiff in directions orthogonal to the first direction.